Residential Location, Work Location, and Labor Market Outcomes of Immigrants In Israel

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1 Introduction

Internal migration and immigration are two important mechanisms by which market economies adjust to changing economic conditions and achieve optimal allocation of resources. An influx of new workers to a particular region, be they new immigrants or internal migrants, can help equilibrate the labor market and improve the interregional allocation of resources. Perhaps due to frictions which prevent the free flow of labor, national policies aimed at facilitating the arrival of new workers to different regions of a country are now widespread. Governments often subsidize the relocation expenses of internal migrants, subsidize mortgages, and help to create employment exchanges which advertise job openings nationally.

The purpose of this paper is to empirically examine the effect of national migration policy on the regional location choices and labor market outcomes of migrant workers. As a particular case study, we focus on measuring the consequences of Israeli government intervention in the housing market on the labor market outcomes of new immigrants from the former Soviet Union. The large number of new immigrants from the former Soviet Union that arrived in Israel towards the end of 1989 were allowed to freely choose their first locations of residence anywhere in the country. Government housing policy presumably influenced these first location choices, as well as subsequent relocation choices, because it substantially changed the regional housing cost structure.[1]

The Israeli government altered relative housing costs across regions of the country through both supply and demand interventions. On the housing demand side, the government provided direct grants to new immigrants to help cover rental costs and provided subsidized mortgages to encourage immigrants to purchase their own homes. The extent of benefits and subsidies depended on, among other things, the region of residence chosen by the immigrants. On the housing supply side, the government helped fund private firms that developed land for housing, and provided purchase guarantees. The government committed itself to purchasing new housing units that were built for new immigrants and that remained unsold. These guarantees substantially reduced the risk of building new housing units outside of the center of the country.

[1] Most new immigrants to Israel that arrived before the late 1980s were not free to choose their initial locations of residence but were rather placed, by the government, in absorption centers around the country.

The government's intervention in the housing market, like many other types of migration policies, had the intention of improving upon the existing distribution of firms and workers across regions of the country. However, by altering the prior market balance between wages and housing costs, immigrants may have been attracted to regions in which their lifetime earnings were, in fact, lower than what they otherwise would have been. It is clear that artificially low housing prices may benefit immigrants. However, lower earnings suggest that the government intervention may have distorted the allocation of labor resources. These distortions are above and beyond the usual distortions created by the need to finance government activity. Of course, even if lifetime earnings were increased as a result of the government intervention, it is important to be able to assess the magnitude of the increase for the purpose of calculating the overall social profitability of the program.

In order to infer the impact of the housing market intervention on regional location choices and labor market outcomes, we estimate a dynamic discrete choice panel data model of employment and location outcomes, using longitudinal data on male Soviet engineers that arrived in Israel between 1989 and 1995. The model assumes that these immigrants optimally choose, upon arrival, and semi-annually thereafter, three major choices. They choose the geographical region in which to live, the geographical region in which to work, and the employment status. The choice set contains seven broadly defined regions, which cover all of Israel, namely: Tel Aviv, Sharon, Shfela, Haifa, the Galilee, the Negev and Jerusalem. The employment options in each location are non-employment, blue-collar employment and white-collar employment.

The model of location choice developed here does not constrain work opportunities to be only in the regional labor market in which one resides. In fact, immigrants may choose to accept employment in one region and reside in another. However, when one resides in one location and works in another, a cost of commuting is incurred. The commuting cost is an additional key policy parameter, in addition to the cost of housing. Transportation policies that alter the cost of commuting provide alternative ways of affecting the distribution of workers over residential and employment locations. For example, the privatization of public transport can lead to decreased commuting costs in the long-run.

The model accounts for several important factors that immigrants (and other workers) face in the labor market. First, the model takes into account the effects of regional amenities, differences in overall regional price levels and immigrant network effects. Second, the model incorporates stochastic job offers and job terminations. Third, the model allows the idiosyncratic shocks to wages, in each region, to be serially correlated. Finally, the model allows for the presence of permanent individual unobserved heterogeneity. The unobserved heterogeneity takes the form of discrete types, or nonparametric discrete individual random effects. That is, individuals are assumed to be of one of three possible types, where each type has, in general, a distinct set of behavioral parameters.

Due to the complexity of the model, and the computational difficulties that arise when allowing for serial correlation, we do not make explicit provisions for forward-looking behavior. The value functions associated with each of the joint location and occupational choices should, therefore, be considered as quasi-reduced form representations of the solution to an intertemporal optimization problem.

The rich error structure in the model also necessitates estimation by simulation. We use a simulated maximum likelihood algorithm that incorporates classification error rates for discrete outcomes and measurement error densities for continuous data (Keane and Wolpin (2001), Keane and Sauer (2003)). The continuous data include accepted wages in the chosen work location and the housing costs in the chosen residential location. In the estimation we include the regional housing cost function, which depends on individual and family characteristics, and occupation-specific wage functions. Adding these two aspects is one of the novel features of the paper. The tight parameterization of decision rules and the nonparametric random effects allow us to correct the estimates of these latter functions for potential biases due to self-selection.

The results of the study indicate that the regions vary considerably in many dimensions, creating different incentives for different types of workers and for individuals that came from different republics in the former USSR. Moreover, the human capital accumulated before arriving in Israel is essentially useless. What matters is the labor history of the immigrants in Israel.

We examine four policies, whose versions were considered by policy makers in the past. These include: (a) wage subsidy to all workers in the Galilee and Negev of 25% of their wages; (b) transportation subsidy of 50% to all workers outside the regions of Tel Aviv, Haifa, and Jerusalem; (c) rent subsidy of 100% to all workers residing in the Galilee and the Negev; and (d) lump-sum residential subsidy of 90,000 NIS given to all individuals that move after arrival in Israel to either the Galilee or the Negev.

The usefulness of some of the policy measures are questionable. Nevertheless, some of the policies, in particular the policy in (d), have been found to be quite effective in creating the right incentives for the immigrants to fulfill the government goal, namely to move them to the Negev and Galilee regions.

The rest of the paper is organized as follows. The next section briefly reviews the relevant literature and puts the current paper into context. Section 3 describes the data. Section 4 presents the model, while Section 5 outlines the estimation procedure. Section 6 discusses the estimation results and model fit. In Section 7 we consider several policy measures that have been considered in the past in Israel. We examine the effects of these policy measures on location choice and labor market outcomes. Section 8 summarizes and concludes.

2 Previous Literature

There is a vast literature on the internal migration of native workers in developing and developed countries (see the surveys by Lucas (1998) and Greenwood (1997)). However, there are very few studies that evaluate the effect of government policy on location choices. Kennan and Walker (2001) is a notable exception. There is also very little formal research that studies the connection between immigrant location decisions and subsequent labor market outcomes. This paper, therefore, contributes to the general literature on both internal migration and immigration.

Two relatively recent papers that our study builds on are Ihlanfeldt (1993) and Borjas (1998). Ihlanfeldt (1993) examines the location and labor market outcomes of young Hispanic immigrants in the U.S. He finds that young Hispanic immigrants have a higher rate of unemployment than young whites. This is largely because a higher proportion of young Hispanic immigrants live in urban areas, while most low-skill jobs are located in non-urban areas. Specifically, he finds that there is a substantial mismatch between residential locations and job opportunities.

Borjas (1998) focuses on the role immigration plays in equilibrating labor markets across geographical locations. He argues that native mobility may not be sufficient to eliminate wage differentials because native workers have relatively high migration costs that prevent them from moving quickly to areas that offer the best economic opportunities (see also Topel (1986) and Blanchard and Katz (1992)). Immigrants, on the other hand, do not incur substantial additional moving costs above and beyond the cost of immigrating to a new country. Therefore, it is easier for immigrants to initially locate in geographical areas that offer the highest wages. Using data from the Current Population Survey, Borjas finds that immigrants do, indeed, make different location decisions than natives (and older immigrants) and, that their location decisions are relatively more responsive to interstate wage differentials.

Our study is also related to several papers that have analyzed different aspects of the recent mass immigration from the former Soviet Union to Israel. This more specific literature has generally not addressed the importance of geographical location on immigrant and native outcomes (see, e.g., Friedberg (2002), Weiss, Sauer and Gotlibovski (2003) and Eckstein and Cohen (2003)). An exception to this is Gotlibovski (1997) which finds that the granting of housing subsidies outside of the center of the country (i.e., outside of Tel Aviv) induces highly-skilled immigrants to move and leads to more unemployment and lower wages.

In the spirit of Kennan and Walker (2003), our model builds on Gotlibovski's previous research by: (a) disaggregating the choice set into more than two regions; (b) taking into account the influence of unobserved regional amenities; (c) taking into account unobserved individual effects; and (d) allowing inter-regional commuting. The current study also incorporates data on individual housing costs and subsequent location choices in addition to the initial one.

3 The Data

The data used in this study are drawn from the population of immigrants that declared, upon arrival at the airport in Israel, that they trained and worked as engineers in the former Soviet Union. According to this self-definition of the source country profession, close to one out of every five immigrants that arrived from the Soviet Union between October 1989 and December 1993 was an engineer. The total number of Soviet engineers that arrived during this time period is $57,400$. This is a large number, especially relative to the existing number of native engineers in Israel immediately prior to October 1989, which was $30,200$.

A survey of engineers in Israel from the former Soviet Union was conducted by the Brookdale Institute of Jerusalem between the months of June and December of 1995. The interviews were face-to-face and in Russian. A total of $1,432$ male and female immigrants were interviewed. We restrict the analysis here to male engineers between the ages of 25 and 55 at the time of arrival, yielding a sample of 697 immigrants. Female immigrant engineers are excluded to avoid further expanding the model to take into account joint labor supply and fertility decisions. The age restriction avoids having to model education and retirement decisions.

The survey of engineers supplies information on the occupational and educational background of the immigrants in the former Soviet Union as well as a detailed history of their work experience in Israel since the time of arrival. The survey also supplies information on the immigrant's residential and work locations. A continuous history of the immigrant's residential location since the time of arrival can be constructed. However, work location is known only at the time of the survey for immigrants employed in Israel as engineers.

Table 1 displays selected descriptive statistics for the sample used in estimation. The mean monthly earnings at the time of the survey (excluding the non-employed) is $3,740$ New Israeli Shekels (NIS). All earnings observations are in 1995 at which time the exchange rate was approximately three NIS per U.S. dollar. The mean monthly housing costs at the time of the survey are $1,040$ NIS. More than 2/3 of the individuals in the sample that reported monthly housing costs own their own homes. The mean age of the immigrants upon arrival is 42 and the mean years of education in the former Soviet Union is 16. Nearly 3/4 of the immigrants originate from the republics of Ukraine, Belarus and Russia. Note also that 40% of the immigrants in the sample came in 1990, so we have about 10 semesters of data for them.

Table 2a displays the region of residence choice distribution over the first 11 six-month periods since arrival.[2] The figures show that in the first period in Israel, there is considerable regional dispersion. Half of the new immigrants are initially located in Tel Aviv and the adjacent regions Sharon and Shfela. The Shfela contains the largest proportion of new immigrants. The proportion of immigrants in Jerusalem is the smallest. The table indicates that there is a relatively sharp fall in the proportion of immigrants residing in Tel Aviv, in which housing costs are relatively large, over time. In contrast, there is a moderate increase in the proportion residing in Shfela (located south of Tel Aviv) and a more rapid increase in the proportion residing in the Galilee. The proportion in the other regions is roughly constant over time. By

[2] Among others cities, the Sharon region contains Herziliya and Kfar Saba. Shfela region contains Ashdod and Gaza. The Galilee encompasses a large area stretching from Netanya to Tiberias. The Negev includes Be'er Sheva and Eilat. Jerusalem includes Bet Shemesh and the West Bank.

period 11, i.e., five and a half years since arrival in Israel, slightly more than half the sample resides outside of the three regions centered around Tel Aviv, i.e., Tel Aviv, Sharon, and Shfela.

Table 2b displays the employment status choice distribution over the first 11 periods since arrival.[3] The figures show that the non-employment rate drops sharply from 76.5% in the first period to 9% in period 11. Employment in blue-collar occupations rises from 21.1% in period 1 to 66.8% in period 3 and then declines steadily to 54% by period 11. The proportion employed in white-collar occupations increases monotonically from 2.4% in period 1 to 36.7% in period 11. The sharp decline in the non-employment rate, the non-monotonic proportion working in blue-collar occupations and the steady rise in the white-collar employment rate illustrate the main features of the labor market assimilation of the immigrants from the former Soviet Union in Israel (see also Weiss, Sauer and Gotlibovski (2003)). Occupational downgrading, relative to that in the former Soviet Union, is followed by a gradual absorption of immigrants back into their original source country profession. In is worthwhile noting that all immigrants in the sample worked in white-collar occupations in the former Soviet Union.

Table 2c displays the distribution of employment status by region of residence averaged over all periods and for some selected periods. The table shows that the non-employment rate is higher outside of the center of the country (Haifa, the Galilee, the Negev and Jerusalem). The non-employment rate is the highest in Haifa. On the other hand, employment in white-collar occupations is most frequent in the Negev, mostly due to the presence of Ben-Gurion University and the concentration of hi-tech plants in the desert region. This seems to create a trade-off between the quality of job one can get and the likelihood that he will lose his job. Also, the table indicates that distributions of employment status vary dramatically across time. For example, the non-employment rate in Haifa was close to 36% in the second semester, but declined to about 9% by period 11. The decline in Jerusalem and the Negev was not as sharp, although the unemployment rates in these two regions were cut by more than half.

Table 3 displays the extent of interregional commuting for individuals employed in white-collar occupations at the time of the survey. The survey records employment

[3] Nonemployment includes the unemployed, labor force dropouts and immigrants in training programs. White-collar employment includes immigrants employed as engineers or in other scientific/academic occupations, in addition to government officials. Blue-collar employment includes those employed as technical workers, teachers, nurses, artists and all others.

location at the time of the survey only for individuals that report that they currently work in a white-collar occupation.[4] Region of employment can also be obtained for these immigrants in months prior to the time of the survey if they report never having changed jobs. The fact that the information on commuting outcomes is conditional on employment status and job mobility introduces another layer of sample selection. The choice model takes this sample selection into account by modeling region of residence, region of work and employment status in each period as a simultaneous decision with common parameters and correlated shocks.

Not surprisingly, the figures in Table 3 reveal that the propensity to commute decreases with increasing average distance between regions. For example, individuals who live in Sharon region are more likely to commute north to Haifa than are individuals that live in Tel Aviv or the Shfela region. Individuals who live in the Shfela region are more likely to commute to the Negev and Jerusalem. Immigrants that live in the major urban areas of Tel Aviv, Haifa, Jerusalem and the Negev (largely Be'er Sheva) are less likely to commute out of their immediate region of residence.

Table 4 displays various aspects of the data on total monthly housing costs. The results of three simple ordinary least-squares (OLS) housing costs regressions are reported. The dependent variable in all regressions is the log of total monthly housing costs at the time of the survey. Column (1) of Table 4 indicates that married couples have 15.7% higher housing costs than those in the base group, namely unmarried individuals. Married couples with one child have 16.7% percent higher housing costs and married couples with two children have 21% percent higher housing costs. The coefficients on these variables are precisely estimated. Married couples with more than two children have only 5.6% percent higher housing costs, but since there is a relatively small number of families of that size in the data it is hard to identify this coefficient. Consequently, this latter coefficient is statistically insignificant. Renters have significantly higher housing costs than do immigrants in owner-occupied dwellings. The coefficient on the renter dummy variable is .365. Approximately one-third of the immigrants in the sample are renters.

Column (2) of Table 4 adds other regressors to the basic specification of column (1). The added regressors are the immigrant's years of education in the former USSR, previous experience in the former USSR, previous experience squared and a

[4] For the blue-collar workers it is commonly known that they largely work in the region in which they reside, and this is the way we model it.

dummy for being at least 40 years old upon arrival in Israel. The added regressors whose coefficients are not reported, for the sake of brevity, include dummy variables for the length of time in the country (number of semesters, or six-month periods since arrival), dummy variables for the republic of origin (Ukraine, Belorussia, Russia) and years of education of the spouse.

Notice that the coefficient on marital status substantially increases after adding other regressors. The reason is that in the previous specification the coefficient on marital status was picking up the negative effect of age on housing costs. Immigrants that are 40 or older upon arrival have lower housing costs and the coefficient on the age dummy is fairly precisely estimated. Nevertheless, older immigrants receive relatively generous housing subsidies. The coefficients on the family size and renter dummies are not substantially changed with the addition of other regressors. There are no significant effects of education and experience, which could be correlated with housing costs through income effects.

Column (3) of Table 4 adds the dummies for region of residence in addition to the other regressors used in the regression reported in Column (2). The base region of residence is Tel Aviv. Note that the coefficients on dummy variable for residing in Haifa, the Galilee and the Negev are all negative, substantial in magnitude, and very precisely estimated. The substantially lower housing costs in these regions could be due to amenity differences, greater distance from the cultural center of the country, and the greater extent of government intervention in the housing market in these regions.[5] Notice also that the coefficient on the renter dummy variable is substantially reduced. The reason is that most renters are located in Tel Aviv, where renting is a more common phenomenon than in any other region in Israel. The coefficients on the regressors not reported in the table indicate that housing costs are significantly higher after the first period since arrival. This is to be expected since many immigrants live in low cost absorption centers for the first six months after arrival. In contrast to previous immigration waves, the recent immigrants from the former Soviet Union could choose not to live in the absorption center in which they were offered housing by the government.

Table 5 displays the results of employment and monthly earnings regressions. The

[5] The Israeli government has always had incentive for people to migrate into the Galilee and the Negev. To achieve this the government subsidizes renting, and gives enormous tax incentives for potential employers to locate their businesses in these two regions.

dependent variable in Columns (1), (2) and (3) is a dummy variable for being employed at the time of the survey (in either a blue-collar or white-collar occupation). The results in Column (1) indicate that employment probabilities are not correlated with education, are quadratic in previous experience and are lower for older immigrants. Nevertheless, while the coefficients on previous experience are precisely estimated, the coefficient on the age dummy is only marginally significant.

The regression whose results are reported in Column (2) adds the other regressors (as in Table 4) besides region of residence dummy variable. The addition of these regressors does not substantially change the results. Column (3) adds region of residence dummy variables. The results indicate that employment probabilities are generally lower outside of Tel Aviv. Employment probabilities are substantially lower in Haifa and the Negev, but they are also lower in Jerusalem and the Galilee. The coefficients on the regressors not reported reveal that immigrants from the Ukraine have significantly lower employment probabilities and immigrants with more educated spouses have significantly higher employment probabilities. Length of time in Israel generally does not improve employment prospects.

Columns (4), (5) and (6) of Table 5 report the results of monthly log earnings regressions. The dependent variable in all three columns is the log of monthly earnings at the time of the survey. The results in Column (4) reveal that monthly earnings are not strongly correlated with education in the former USSR nor are they correlated with previous experience. This is a common finding in the literature on Soviet immigrants in Israel. Older immigrants, however, do have significantly lower monthly earnings (by about 11 percent). Column (5) adds the other regressors without substantially changing the results except that the earnings penalty for older immigrants is weakened somewhat. Column (6) adds the region of residence dummy variables. The results indicate that there are no significant regional wage differentials except for the Shfela. Immigrants that reside in the Shfela region have about 10 percent higher monthly earnings than those residing in Tel Aviv.

The coefficients on the regressors not reported indicate that time in Israel is a strong and significant determinant of earnings. For example, immigrants in the country for 12 periods have 37 percent higher earnings than immigrants in the country for only one period. The immigrants who reside in the country for 12 periods also have 17 percent higher earnings than those in the country for 10 periods. The first 8 periods in Israel have no significant payoff, followed by a steep earnings profile with respect to time spent in Israel. Note that the time in Israel dummy variables can be thought of as instruments for actual work experience since year of arrival in the first few years of the immigration wave is generally thought to be exogenous to potential employment and earnings outcomes in Israel. Other results not reported in the table but are worthy of mention are: There is about 8 percent lower earnings among immigrants from the Ukraine. Furthermore, there is an increase of .6 percentage points in earnings for each year of spousal education. Both of the coefficients on these latter variables are precisely estimated.

The regression results for the housing costs, employment and earnings functions suggest that region of residence is an important determinant of housing costs and employment probabilities. However, region of residence is not a good predictor of the level of earnings, for those immigrants who are employed. Housing costs are substantially lower outside of the center of the country, but so are the employment prospects. Thus, there is evidence in the raw data of a non-trivial interaction between the housing location and labor market outcomes, namely earnings.[6]

Obviously the regression results reported above suffer from biases due to self-selection. Housing costs, employment status, earnings, and region of residence are all determined simultaneously, and are subject to correlated shocks and common parameters. The model presented below allows us to address these self-selection problems and correct for the associated biases. The model also facilitates the evaluation of the effect of potential government interventions on optimal location and employment decisions.

4 The Model

4.1 Basic Structure

The model of location and employment decisions assumes that upon arrival in the host country and in each period (semester) after arrival, immigrants choose a region of residence, a region of employment and employment status, in order to maximize the expected discounted present value of remaining lifetime utility. The total number of regions in the country is denoted by R. The regions are defined broadly as: Tel

[6] Additional features of the raw data are related to transitions between states, i.e., geographical location of housing and work. The timing of transitions will be considered in the discussion of the model fit below.

Aviv ($r = 1$), Sharon ($r = 2$), Shfela ($r = 3$), Haifa ($r = 4$), the Galilee ($r = 5$), the Negev ($r = 6$), and Jerusalem ($r = 7$). The total number of employment options is denoted by K. Employment options are defined broadly as: non-employment ($k = 1$), white-collar employment ($k = 2$), and blue-collar employment ($k = 3$). The mutually exclusive choice set has dimension $R^2 \times K$ in each period t, that is, a region of residence, are region of employment, and employment status.

Value of Non-Employment:

Remaining lifetime utility for individual i in the non-employment sector ($k = 1$) in region r at time t, in the region in which the immigrant resides, is assumed to be

$$u_{i1rt} = b_{1r}\left(\varepsilon_{i1rt}\right) + \tau_r\left(x_{it}, \mu_{ir}\right) - hc_{rj}\left(x_{it}\right) - \gamma_j I\left(r_t \neq r_{t-1}\right), \tag{1}$$

for $j = 1, ..., J$, where J is the number of possibly different individual types.

The first term in (1), $b_{1r}\left(\varepsilon_{i1rt}\right)$, represents the per period consumption and leisure value of non-employment in region r. The consumption and leisure value of non-employment is allowed to vary with time since arrival in Israel and according to the realization of the random variable ε_{i1rt}. The value of non-employment could be relatively high soon after arrival in the host country as assets are drawn down and investments are made in language acquisition and re-training. Shocks to the consumption and leisure value of non-employment capture unobserved changes in asset levels and available leisure time.[7]

The second term in (1), $\tau_r\left(x_{it}, \mu_{ir}\right)$, represents the individual's per period preference for residing in region r. The individual's preference for residing in region r is allowed to be a function of a vector of observed individual characteristics, x_{it}, and a stochastic unobserved regional-specific characteristic, μ_{ir}. Among other things, x_{it} includes the immigrant's republic of residence in the former Soviet Union. Republic of origin could theoretically shift the taste for residing in a particular region in Israel if there is a concentration of immigrants from the same republic already living there. In other words, the republic of origin indirectly captures immigrant network effects.

The unobserved regional characteristic, μ_{ir}, captures the immigrant's valuation of regional amenities, e.g., proximity to a beach, landscape, climate, the size of housing

[7] Immigrant re-training courses in Israel are widely believed to be ineffective in significantly improving labor market outcomes (see Eckstein and Cohen (2003) for an explicit analysis). Therefore, we mostly ignore the role of training except for its effect on the duration of nonemployment.

per unit cost and the quantity and quality of local public services. It is assumed that each individual's initial realization from the distribution of μ_{ir} is fixed over time but that all immigrants draw from the same distribution of "match qualities". Moreover, the distribution of μ_{ir} is independent across regions, but is not necessarily identically distributed. A relatively small variance in a particular region implies that immigrants value the unobserved characteristics of that region in a similar way.

The third term in (1), $hc_{rj}\left(x_{it}\right)$, is the per period total cost of housing in region r. Note that the cost of housing is also a function of x_{it}. Among other characteristics, marital status and family size shift the cost of housing for immigrant i in region r. Family size and marital status generally increase the demand for larger, more expensive, housing units.

Finally the last term in (1), γ_j, is the individual type-specific cost of moving from one region to another. Note that an individual incurs this cost only in the event that he changes his location of residence between two adjacent periods.

Value of Working in the Blue- and White-Collar Occupations:

Below we specify the utilities in blue-collar and white-collar employment in each region. We distinguish between the two employment sectors. An individual may live in one region and work in a different region, provided that the individual works in the white-collar sector. If an individual works in the blue-collar sector then he is assumed to reside in the same region. The reason for imposing this restriction is that we do not have any information in the data set about the region in which the blue-collar workers work. While this may look like a major obstacle, it is well-known that very few blue-collar workers, if at all, actually work out of their residential regions.

The utilities in the white-collar employment, i.e., $k = 2$, for a worker who works at region r' and resides in region r, is specified as

$$u_{i2rt} = 6 \cdot w_{kr't}(x_i, x_{ikt})e^{\varepsilon_{i2r't}} + \tau_r(x_{it}, \mu_{ir}) - hc_{rj}(x_i) - \gamma_j I\left(r_t \neq r_{t-1}\right) - tc(r', r), \quad (2)$$

where the deterministic components of the wage offer function in region r', $w_{2r't}$, is assumed to be a function of the individual's time-invariant characteristics x_i, and accumulated specific work experience, x_{ikt}. Accumulated work experience is distinguished by employment sector, but it is not distinguished by region. Nevertheless, in principle, accumulated sector-specific work experience is allowed to have different returns in each region. The law of motion in work experience is simply one in which an extra unit of experience (semester) is accumulated in each period the individual is employed in the white-collar sector. The initial condition is $x_{ikt} = 0$. That is, x_{kt} measures only the accumulated work experience since arrival in Israel. However, note that previous work experience in the source country is included in the vector x_i. The stochastic component of the wage offer function in region r', ε_{i2rt} is multiplicative, leading to standard Mincer-type wage functions. Note that the wage offer function is multiplied by 6, since the earnings are reported per month, while the period considered here consists of six months.

The next three terms in (2) are the same as the first three terms in (1), namely the valuation of the taste for residing in region r, the per period total cost of housing in region r, and the individual type-specific cost of moving from region r. Below we allow the cost to differ for moves between different regions.

The fourth term, $tc(r', r)$, represents the commuting costs between the region of residence r, and the region of employment r'. Note that an immigrant can choose to commute to the same work region from a different region of residence than in the previous period. In this case, a one-time moving cost, $\gamma_j I\left(r_t \neq r_{t-1}\right)$, is incurred and the commuting cost changes to say $tc(r', r'')$. The immigrant can also decide to simultaneously move to a new residential region and a new region of employment. Commuting and moving costs change accordingly.

The utility in the blue-collar employment, $k = 3$, in region r, is specified in a similar fashion, only that a worker in the blue-collar sector is constrained to work in the same sector in which he resides. That is, it is specified as

$$u_{i3rt} = 6 \cdot w_{3rt}(x_i, x_{i3t}) e^{\varepsilon_{i3rt}} + \tau_r(x_{it}, \mu_{ir}) - hc_{rj}(x_i) - \gamma_j I\left(r_t \neq r_{t-1}\right), \tag{3}$$

where the wage offer function $w_{3rt}(x_i, x_{i3t})$ is specified in a similar fashion to the wage offer function in the white-collar sector.

The Distribution of the Stochastic Terms:

The stochastic components ε_{ikrt}, for $k = 1, 2, 3$, are independent and identically distributed across regions and across employment sectors within each region r. However, we allow the ε_{ikrt}'s, $k = 1, 2, 3$, to be serially correlated within the region of employment, that is, for each ε_{ikrt} we have

$$\varepsilon_{ikrt} = \rho_k \varepsilon_{ikrt-1} + \nu_{ikrt}, \tag{4}$$

conditional on sector k being chosen in period $t-1$. The $AR(1)$ coefficient ρ_k is allowed to differ across employment sectors, but it is constrained to be identical across regions. For employment sectors that were not chosen in the previous period we simply have $\varepsilon_{ikrt} = \nu_{ikrt}$.

Although the model does not impose any restrictions on the choice of residential region, there are restrictions placed on the choice of employment sector and region of employment. A job in a blue-collar or white-collar occupation is obtainable in a particular region only if an employment offer is received. An employment offer may be received in any sector and any region of the country in each period. That is, an individual can get up to $R \cdot K = 14$ offers in each period.

Job Offers and Job Loss:

The probability of receiving an offer in occupation k ($k = 2, 3$) in region r at time t, given that the individual worked in the same occupation k and same region in time $t-1$ is specified as

$$P_{krt} = 1 - \lambda_{kr}, \tag{5}$$

where λ_{kr} is a involuntary dismissal probability. If the individual is not dismissed then he can always continue to work in that same occupation in the same region. The parameter λ_{kr} is assumed to be logistic so that dismissal probabilities lie in the unit interval. Moreover, it is assumed to depend on the sector and the individual's type, but does not depend on the region of employment. That is, for $k = 2, 3$, we have

$$\lambda_{krj} = \lambda_{kj} = \exp\left\{\eta_{kj}\right\} / \left(1 + \exp\left\{\eta_{kj}\right\}\right).$$

Outside offers in sector k' in any region r also arrive stochastically in each period. The probability of receiving an outside offer is

$$P_{k'rit} = \exp\left\{A_{k'rit}\right\}\left[1 + \exp\left\{A_{k'rit}\right\}\right],$$

where

$$A_{k'rit} = \lambda_{0k'r} + \lambda_{1k} I\,(\text{unemp. at } t-1) + \lambda_{2k}\text{age}_i + \lambda_{3k}\text{age}_i^2 + \lambda_{4k} TP_{1i} + \lambda_{5k} TP_{2i},$$

where $TP_{li} = 1$ if the individual is of type l, and $TP_{li} = 0$, otherwise, for $l = 1, 2$. The base type is type 0.

Again, note that we impose no restrictions on the number of outside offers that may arrive from different regions and employment sectors in period t.

4.2 Additional Parameterization

In order to carry out the estimation one needs to introduce some additional parameterization from some of the functions introduced above. Below we described this additional parameterization.

The per period consumption and leisure value of non-employment in region r is further parameterized to be a function of time since arrival in Israel. For the first six-month period we have

$$b_{1rt}\left(\varepsilon_{i1rt}\right) = \alpha_r I\left(t=1\right) + \exp\left(\varepsilon_{i1rt}\right), \tag{7}$$

for $t = 1, ..., T$, where $I\left(\cdot\right)$ is the usual indicator. Note that the first period (six months) in the host country is assumed to have differential consumption and leisure value.

The per period taste for residing in region r is parameterized to be a simple linear function of the republic of origin and the individual specific valuation of region r, μ_{ir},

$$\tau_r(x_{it}, \mu_{ri}) = \tau_{0r} + \tau_{1r}R_{1i} + \tau_{2r}R_{2i} + \tau_{3r}R_{3i} + \tau_{4r}R_{4i} + \exp\left(\mu_{ir}\right), \tag{8}$$

where $R_{li} = 1$, $l = 1, ..., 4$, for each of the four groups of republics identified in the data, and $R_{li} = 0$, otherwise. The base republic of origin is Russia.

The per period total cost of housing in region r is specified as a linear function of marital status, family size and unobserved discrete type, that is,

$$hc_{rj}(x_{it}) = 6 * \exp\left\{\gamma_{0r} + \gamma_1 M_{it} + \gamma_2 NK_{it} + \gamma_3 TP_{1i} + \gamma_4 TP_{2i}\right\}$$

where $M_{it} = 1$ if the immigrant is married, and $M_{it} = 0$, otherwise, NK_{it} is the number of children under 18 in the family. As before, $TP_{1i} = 1$ indicates the immigrant is unobserved type 1 and $TP_{2i} = 1$ indicates the immigrant is unobserved type 2. The base type is type 0.

The three unobserved discrete individual types are specified a-priori. The individual type probabilities are estimate as parameters along with the other parameters of the model. Including individual-specific effects in the housing cost functions helps control for unobserved assets that are also likely to be positively correlated with the immigrant's unobserved productivity.

The deterministic components of the wage offer functions in region r, w_{krt}, $k = 2, 3$, are specified as,

$$\begin{aligned} \ln w_{jkrit}(x_i, x_t) &= \beta_{0kr} + \beta_{1k} S_i + \beta_{2k} x_{0i} + \beta_{3k} x_{0i}^2 + \beta_{4k} x_{kt} + \beta_{5k} x_{kt}^2 \\ &\quad + \beta_{6k} I\left(\text{age}_i >= 40\right) + \beta_{7k} TP_{1i} + \beta_{8k} TP_{2i}, \end{aligned} \tag{10}$$

where $TP_{ji} = 1$, for $j = 1, 2$, if the individual is type j, and $TP_{ji} = 0$, otherwise. The base type is again type 0. The variable S_i is the years of completed schooling in the former USSR. The term x_{0i} denotes the years of previous experience before arriving in Israel, while x_{kt} denotes the number of sector-specific years of experience after arriving in Israel. Note that an unobserved type appears in the wage function in addition to the housing cost function, thereby accounting for possible correlation in the unobserved components of these two functions.

It is important to note that all of the observed variables in the vector x_i are measured at the time of arrival of the immigrant in Israel. These variables are widely believed to be exogenous to potential outcomes in Israel among immigrants that arrived in the first few years of the immigration wave. There is, therefore, no initial conditions problem in this dynamic discrete choice model.

5 Estimation

5.1 The General Algorithm

Given the partially observed choice histories for many individuals in the data, especially employment location, and the computational complexity that arises from contemporaneously and serially correlated disturbances, the most computationally practical estimation technique is simulated maximum likelihood (SML), allowing for classification errors in discrete choices. We follow here the method developed in Keane and Sauer (2002) and applied also in Keane and Wolpin (2001). Incorporating classification errors into the SML has two major advantages. First, it helps avoid the usual problem of zero probabilities that often arises in pure frequency simulation. Classification error implies that each simulated choice history is the individual's true choice history with some positive probability. That is, it allows for differences between the simulated choice history and the observed choice history.

Second, the choice probabilities are computed from unconditional simulations of the model, rather than conditional on past reported choices and realizations of the relevant random variables. In other words, the SML solves the problem of missing endogenous state variables in dynamic discrete choice models.

The estimation procedure is based on matching multiple simulated choice histories with the observed choice history of each individual in the data. Every simulated choice history generates a particular product of classification error rates, depending on the corresponding observed choice history. The likelihood contribution for each individual is then an average over the generated classification error rate products. Observed continuous data are incorporated into the likelihood function via measurement error densities. That is, the density of measurement error necessary to reconcile the history of simulated outcomes (here wages) with observed outcomes.

For ease of exposition, suppose the data consist of $\{D_i^*, w_i^*, x_i\}_{i=1}^N$, where $D_i^* = \{d_{it}^*\}_{t=1}^T$ is the history of reported choices (only two possible choices in our model of residence location and work location), $w_i^* = \{w_{it}^*\}_{t=1}^T$ is the history of reported wages in the chosen option, and x_i is the reported initial condition (i.e., a vector of observed characteristics only) for individual i. The number of individuals in the sample is denoted by N.

Since there may be missing choices and accepted wages, we define two additional variables $I\left(d_{it}^* \text{ is observed}\right)$ and $I\left(w_{it}^* \text{ is observed}\right)$. These are simply indicator functions which equal one if the condition in brackets is true, and zero otherwise.

Estimation of the model proceeds as follows:

Step 1: Given x_i and a particular unobserved type j, draw M times from the distribution of wage offers in every period t to form the sequence $\left\{\{w_{ijtm}\}_{t=1}^T\right\}_{m=1}^M$.

Step 2: Given x_i, the individual's unobserved type, and $\left\{\{w_{itm}\}_{t=1}^T\right\}_{m=1}^M$, construct M simulated choice histories in every period t, to form the sequence $\left\{\{d_{mt}\}_{t=1}^T\right\}_{m=1}^M$.

Step 3: Compute classification error rates π_{jkt} which allow the probability of reporting a particular choice to differ from the true choice and which allow for persistence in mis-reporting, that is, compute

$$\begin{aligned}
\pi_{11t} &= \Pr\left(d_{it} = 1 \text{ reported} \mid d_{it} = 1 \text{ occurred }\right) = \frac{e^{\gamma_0+\gamma_1+\gamma_2 d^*_{it-1}}}{1+e^{\gamma_0+\gamma_1+\gamma_2 d^*_{it-1}}} \\
\pi_{01t} &= \Pr\left(d_{it} = 1 \text{ reported} \mid d_{it} = 0 \text{ occurred }\right) = \frac{e^{\gamma_0+\gamma_2 d^*_{it-1}}}{1+e^{\gamma_0+\gamma_2 d^*_{it-1}}} \\
\pi_{00t} &= 1 - \pi_{01t} \\
\pi_{10t} &= 1 - \pi_{11t}.
\end{aligned} \tag{12}$$

Step 4: Form the type-specific likelihood contribution for each individual i as:

$$\begin{aligned}
&\widehat{P}\left(D^*_i, w^*_i, x_i|\theta\right) \\
&= \frac{1}{M}\sum_{m=1}^{M}\prod_{t=1}^{T}\left(\sum_{j=0}^{1}\sum_{k=0}^{1}\widehat{\pi}_{jkt} I\left[d^m_{it} = j, d^*_{it} = k\right]\right)^{I\left(d^*_{it} \text{ is observed}\right)} f_u\left(u\right)^{I\left(w^*_{it} \text{ is observed}\right)}
\end{aligned} \tag{13}$$

where θ is the vector containing all the model parameters and $f_u\left(u\right)$ is the measurement error density in reported wages.

Step 5: Repeat steps (1) through (4) for each unobserved type in the population, in our case $j = 0, 1, 2$.

Step 6: Average the type-specific likelihood contributions for each individual i using the unobserved type probabilities as weights.

Step 7: Use the unconditional (on type) likelihood contributions to build the log-likelihood function.

Step 8: Maximize the log-likelihood.

5.2 Computation of the Individual Likelihood

The estimation takes the sequential steps described below. Each step is repeated for each individual in the sample. For simplicity we omit the subscript i from all quantities below.

1. Let the current estimated probabilities for an offer in region r and sector k be denoted by $\widehat{p}_{rk}$, for $r = 1, ..., 7$, and $k = 2, 3$. Draw ζ_{rk}, $r = 1, ..., 7$; $k = 2, 3$, from a uniform distribution $U(0, 1)$. If $\zeta_{rk} > \widehat{p}_{rk}$ then assume that the individual was offered a job in sector k at region r.

2. Recall that a person who works in the white-collar sector can live in a different region then he works. If a person works in the blue-collar occupation he works in the same place where he resides. Finally, if a person is unemployed he has only the residential choice. Consequently, the total number of possible choices are given by $N_p = 7 \cdot 7 + 7 + 7 = 63$.

   Compute the value function for all N_p alternative possibilities. Let, $V_1, ..., V_{N_p}$ denote these values and let $V_{\max} = \max\left\{V_1, ..., V_{N_p}\right\}$.

   Compute also

$$\begin{aligned} V_l^d &= V_l - V_{\max}, \\ e_l^d &= \exp\left\{V_l^d/\tau\right\}, \end{aligned}$$

   for $l = 1, ..., N_p$, where τ is some constant (in our case $\tau = 10000$).

3. Compute the probabilities for all possible combinations as

$$\widetilde{p}_l^d = e_l^d \Big/ \sum_{m=1}^{N_p} e_m^d,$$

   for $l = 1, ..., N_p$.

4. Repeat Step 1 through Step 4 for M simulations (80 simulations in our case) and form

$$\overline{p}_l = \sum_{j=1}^{R} \widetilde{p}_{lj}^d \bigg/ R,$$

   for $l = 1, ..., N_p$.

5. To take into account possible classification errors we now form the probability which is introduced into the likelihood. We define these as follows:

   (a) If the probability for the particular possible choice is also the actual choice observed in the data then we let

$$p_l = c + (1 - c)\,\overline{p}_l, \tag{5}$$

for some constant $0 < c < 1$.

(b) If this is not the case then we set

$$p_l = (1 - c)\,\overline{p}_l.$$

The constant c is a parameter to be estimated, which indicates the degree of accurate classification for the smallest probabilities.

6. Repeat Step 1 through Step 5 as part of the maximization of the (log) likelihood with respect to the parameters of the model until convergence is achieved.

6 Estimation Results

6.1 Parameter Estimates

The resulting parameters are provided in Tables 6 through Table 11. In Tables 6, 7, and 8 we present the parameter estimates for the three value function: the value of non-employment, the value of working in the white-collar occupation, and the value of working in the blue collar occupation, respectively.

In Tables 9 and 10 we present the parameter associated with the probabilities of dismissal and the probability of getting wage offers, respectively. Finally, in Table 11 we present estimates of additional common parameters of the model.

We present here only the final estimation results, after imposing some additional restrictions on the parameter estimates, incorporating the results from our initial estimations.

Table 6 indicates that the consumption and leisure value of non-employment is quite similar across the different regions. Recall that the estimate of the α's are the value in the first period after arriving in Israel. Moreover, most of the immigrants do not work in the first period. The results indicate that the immigrants self-select themselves into the region they are most comfortable with in the first period, although new work opportunity in later periods may cause them to change their place of residence.

For the taste for residing in a region, the results indicate that, everything else held constant, immigrants prefer to live in the Shfela region and in Haifa, relative to the Tel Aviv, Sharon, Galilee, and Jerusalem, for which the constant terms were found to be statistically zero. Also, and not surprisingly, immigrants, on average, prefer not to live in the Negev, a region that is much hotter than the rest of the country and has relatively few towns and residential establishments. The coefficients τ_2, τ_3, and τ_4, are the coefficients on the dummy variables indicating the republic of origin of the immigrant, namely the Ukraine, Belarus, and Russia, respectively (the base alternative is all other states in the former USSR). The results indicate that individuals who came from the Ukraine prefer to live in the northern part of Israel, that is, in Haifa and the Galilee and in the Shfela region (south of Tel Aviv). Immigrants who came from Belarus, and especially immigrants who came from, Russia, prefer to live in the Sharon and Shfela. Living in the southern part of Israel has negative, or no impact, on all immigrants, regardless of their republic of origin.

The cost of housing results are presented at the bottom of Table 6. They indicate that the cost of housing is, as expected, the largest in Tel Aviv and the lowest in the Negev. Also, the cost of living tends to be higher in areas that are largely urban areas, such as the Shfela, Tel Aviv, Haifa, and Jerusalem. Note also that there a significant effect of being married on cost of housing, but there is absolutely no effect of having children. But one has to remember that the families coming from the former USSR were typically small, with an average number of children under 21 being slightly over 1.

It is also transparent that the cost of living does not vary across the population. The effects of type 0 and type 1 individuals are literally zero. There is some effect of being type 2 individuals, but the type is estimated to be (see below) only about 6% of the population of immigrants.

Table 7 reports the results for the utility value of working in the white-collar occupation. Note that the remaining life-time utility has two components which have already been discussed, these are the taste for residing in a region and the housing costs. The key element of the utility is the wage earned in the white-collar sector. First, the results show that there is a clear wage differential between regions. Clearly, the wage in Tel Aviv, holding everything else constant, is the largest, while the wages in the Sharon and Jerusalem are the smallest. Interestingly, we see that there are wage premiums for working in the very north, i.e., the Galilee, and the southern region of the Negev.

As for the rest of the deterministic component of the wage function, we see that the coefficients on both schooling and experience in the home country are negative, although very slightly. In comparison, the coefficient on the experience accumulated since arrival in Israel is relatively large, positive, and significant. Nevertheless, we find that for both initial experience and the experience accumulated in Israel there is no curvature. However, this may be due to the fact that the sample is composed of relatively older individuals, with an average age of over 42 years, much higher than in the population at large.

Contrary to the results of the reduced form estimation, here we see that there is quite a substantial premium for being over 40 years of age. However, part of this result stems from the fact that we had to impose equality of this coefficient to the coefficient on the 40 year-old dummy variable in the wage function in the blue-collar sector. A wage premium is also observed for the type 1 individuals, a group that accounts for approximately 26% of the population (see the results below in Table 11).

In Table 8 we report similar results for the wage function in the blue-collar sector. For limitation of data and based on preliminary estimation the coefficients on all variables in the wage function are constrained to be the same as for the white collar occupation. The only difference is that we allow the coefficients on the region-specific dummy variables to be different. We find, in general, that, as expected, these coefficients are smaller than those obtained for the white-collar sector. Moreover, they are quite similar for a group of five regions, while they are smaller, for the other two regions (Jerusalem and the Negev). That is, there is much more equalization of wages across the various regions in Israel, which puts pressure on the blue-collar workers to locate themselves outside of the major urban areas as is shown below.

A noticeable difference in the results for the wage functions between the two occupations is in the AR coefficient (see line 10 in Tables 7 and 8). While the AR coefficient in the white-collar sector is positive, quite large (.5), and significant, for the blue-collar sector is essentially zero. That is, while there is significant correlation in wage in the more developed sector, wages in the blue-collar sector are virtually uncorrelated over time.

Finally, at the bottom part of Table 7 we report the estimates for the travelling costs. These costs are relevant only for the white-collar workers, since the blue-collar workers are constrained to work in the same region in which they reside. While the estimated costs are expressed in terms of total NIS for the six-month period, some of the cost is non-pecuniary costs due to loss of time, being more tired, etc. In the data there are regions that are too far for any individual to be able to live in one and work in the other. For this reason we constrained all these coefficients to be equal to the greatest coefficients estimated from the other regions. Altogether we estimated three coefficients which are different from each other. The results indicate that the costs associated with travelling to a job are quite high, even for between regions that are relatively close. An expense of about 8,500 NIS (that is tc_1) per period amounts to an expense that is equivalent to over 20% of the earnings of an average worker. An estimate of close to 19,000NIS (that is tc_3) implies that there will not be much travelling between regions, unless the wage offer is quite substantial, as is the case for some of the individuals in the sample.

Table 9 presents the results for the parameters associated with the probability of losing a job by individual type. The results indicates that the probability of losing a job is rather small for most of the population, that is, for the individuals who are of type 1 or type 2. Nevertheless, there is a small part of the population, that is, the 6% of individuals of type 3, that have quite high probability of losing their job of about 28%.

In Table 10 we report the parameters associated with the probabilities of getting wage offers, by region, and by individual type. These probabilities apply to individuals who either worked outside of the specified region in the period preceding the current period, or for individuals who did not work at all. Several of the results stand out. First, note that while all the regional coefficients for the white-collar sector (i.e., $\lambda_{10}(r)$) are negative, those for the blue-collar sector (i.e., $\lambda_{20}(r)$) are positive. This implies that it is a lot more likely to obtain a wage offer in the blue-collar sector than in the white-collar sector, regardless of the region. Moreover, the order of the implied probabilities for the blue- versus white-collar sector are almost completely reversed. For example, everything else held constant, the probability of obtaining a wage offer in the white collar sector is more than four time larger in the Negev than in Tel Aviv. In contrast, the probability of obtaining a wage offer in the blue-collar sector is over 20% higher in Tel Aviv. That is, while there seem to be a greater demand for blue-collar workers in Tel Aviv, there is a clear shortage of white-collar workers in the Negev relative to the major urban areas in the country. This is reflected, and is affected, by the vastly different costs of living in the Negev relative to the major urban areas. The wage for the white-collar workers is higher, which allows them to reside in the more preferred urban areas. In contrast the blue-collar workers who are, by and large, restricted to work in their place of residence, find it much more difficult to live outside the less populated areas, which are largely in the south.

The estimates reported in Table 10 also indicate that the being non-employed in a given period lowers the probability of obtaining a wage offer in subsequent periods. Moreover, the older a person the more difficult it is to obtain a wage offer in either sector. This effect is clearly non-linear as indicated by the fact that the estimate of λ_3, the coefficient on age squared, is negative. That is, older individuals find it more difficult to find a job, and more so the older they become.

The last two λ estimates (i.e., λ_4 and λ_5) indicate that it is more likely for an individual of type 1 to obtain a job relative to individuals of type 0, and even more so relative to individuals of type 2. This and the results obtained above for the probability of dismissal imply not only that individuals of type 2 are less likely to be offered a job, they are also much more likely to lose their job, conditional on having one. The reverse is the case for individuals of type 0.

Finally, Table 11 provides estimates of some additional parameters of the model. First, the table provides the estimated parameters associated with the frequency in the population of the various individual types (line 1). Note that the estimates imply that the population of immigrants is composed mostly of type 0 individuals (68%) and type 2 individuals (26%). Since the outcome variable for type 2 individuals is much worse than for the other two types, it is hardly a problem sincet this group account for only 6% of the population of immigrants.

The moving cost estimates for each of the types of individuals are presented in line 2. As the table indicates the moving costs for type 0 individuals are about 59% larger than for type 1 individuals, and are almost seven times larger than those for type 2 individuals. This stems from the fact that type 0 individuals are more likely to get a wage offer in any of the regions, are less likely to lose a job once they have it, and are more likely to earn a larger wage. Hence, they can afford larger expenses, one of which is moving costs to better regions (according to their choices), with larger housing units, etc.

The estimated parameters reported in lines 3 and 4 of Table 11 are for the standard errors of the unconditional log wage and unconditional log housing costs. That is, these are the estimates of the common measurement error standard errors for the two observed continuous variables log of accepted wage offers and log of actual housing costs, respectively.

Finally, the parameter estimate associated with the classification error rate simply implies that the base classification error for all discrete outcomes in the model, namely the residential location and work location outcomes is $c = .835$,where c is defined in (5).

6.2 Model Fit

To better understand the degree of fitness of the model we compare some of the predictions of the model with the observed outcomes.

In Figure 1 we report the density estimates for the observed and predicted wages. We first depict the densities for the whole population (Figure 1a). We also depict the wage density for the two sectors separately: In Figure 1b we depict the densities for the white-collar sector, while in Figure 1c we do so for the blue-collar sector. We can see that overall the predictions of the model are quite good, especially for the white-collar occupation. However, we do overpredict the mean and median of the wage distribution for the white-collar workers. Our predicted mean and median wages are \$5,268 and \$5,152, respectively, while the corresponding numbers in the observed data are \$4,955 and \$4,561. In contrast we underpredict the standard deviation of wages: 1,261 and 2,172 for the predicted and observed data, respectively.

For the blue-collar sector we predicted the mean and median very accurately. The mean and median in the observed data are \$3,292 and \$3,251, while the corresponding numbers based on our predictions are \$3,298 and \$3,037. However, again, we underpredict the variance of the wage distribution.

In Table 12 through Table 16 we examine various aspects of the model's prediction. The first two panels of each table provide the actual and predicted values for the relevant variable(s). In Panel a we provide statistics based on the observed data, while in Panel b (under the title Basic Model) we provide the prediction of the model whose estimates were reported above. In each table we have four additional panels Panel c through Panel f which report the results from the policy simulations which are described below.

In Table 12 we report the predicted and actual distribution of employment status by semester. As will be seen below, it is extremely hard to fit the data for the first period, since that period is an introduction period in a new country with a new language, new occupational requirements, etc. Nevertheless, even the prediction for the first period is quite good. The model predicts faster transition from the non-employment state. The model does predict though that most new immigrants will be working in the blue-collar sector, even more so than in reality.

Table 13 reports the observed and predicted work location. Typically, this is the most difficult variable to fit. Moreover, given that the blue-collar workers do not report their work location it is necessary that we examine the prediction of the model for only the white-collar workers. The overall performance of the model is quite satisfactory. It captures the overall distribution of workers across the various regions quite accurately. Moreover, the model captures well the transitions over time between regions. In particular, the model captures the move of people from Tel Aviv into the adjacent regions, i.e., the Shfela and Sharon.

Table 14 reports the predictions for the place of residence for both the blue- and white-collar workers. Again, the overall predictions of the model are quite satisfactory. Nevertheless, the model somewhat overpredicts the percentage of individuals that choose to live in Tel Aviv and the Negev, while it underpredicts the percentage of individuals residing in the Shfela and Galilee regions.

Next we examine the simultaneous choices of work and residential locations. For the same reasons described above for work location, in this examination we restrict attention to the white-collar workers. The results are presented in Tables 15 and 16. In Table 15 we report the full joint distribution of residential and work locations. In Table 16 we report the conditional distribution of work location, conditional on the residential choice. Both tables are calculated for the whole period. The model predicts the overall location and residential choices extremely well. It correctly predicts that most people work in areas close to their residential area. Moreover, it accurately predicts the percentage of people in each residential-work combination of regions.

The sum of the columns reported in the last column of the table provides a summary of the residential location choices reported in Table 14, over the entire sample period. Similarly, the sum of the row, reported in the last row of the table provides a summary for the work location choices, reported in Table 13, over the entire sample period. In both cases we see a very good overall fit, except maybe for the choices made regarding working and residing in the Galilee and Negev regions.

Table 16 provides a different angle at the distribution of work location. Here we present the conditional distribution conditional on the place of residence. Again, with small deviation, the model predict the conditional distribution very well. It does miss in predicting the probability of working in the Shfela region, conditional on living in the Sharon region, but the overall number of individuals in this particular combination is very small. Also, the model predicts that all individuals from Jerusalem will work in Jerusalem and similarly for the Negev region.

7 Policy Implications

We consider here four alternative policy simulations, to assess the effect of a number of policies that have been proposed in the past. Below we motivate and describe each simulation. This is followed by a close examination of the resulting changes in the key choice variables, namely work and residential location and the choice of employment status.

7.1 Wage Subsidy

Motivated by the goal described in the previous policy simulation here we examine the effect of a direct wage subsidy. While the application of this policy can be somewhat difficult, it gives individuals the incentive not only to locate themselves to the Negev and the Galilee, but it also may induce them to work more, because the income effect is likely to be the dominating effect and the subsidy is determined as a percentage increase. That is, we consider a policy that would increase wages for both white- and blue-collar workers who work in the Negev or the Galilee by 25%.

The results from this simulation are reported in Panel c of Table 12 through Table 16. Panel c of Table 12 indicates that this policy leads to a very interesting result. It lowers the fraction of people who are non-employed in the first two periods, increasing the number of workers in the blue-collar occupation, where it is a lot easier for the workers to obtain wage offers. These offers are now 25% larger for those who chose to work in the Negev and the Galilee. The impact of this policy is not sustained throughout the whole period. By period 11 the distribution of immigrants across employment statuses are almost the same as before (see Panel b of Table 12).

The main impact of this policy is in the residential choices. Panel c of Table 13a provides the results for the white-collar workers. It shows that the fraction of individuals who choose to work in the Negev increases enormously from 10-13% under the base model to almost 26%. Interestingly, the Galilee has not been affected by this policy, largely because the traveling cost to the Galilee are quite high and the housing costs are larger than the housing alternatives that are available in the Negev. Note that this policy induces more individuals to work in Tel Aviv, largely because of increase chance of obtaining a wage offer in Tel Aviv and the fact the wages in Tel Aviv are larger than those in all other regions. Switching into working in Tel Aviv comes largely from much reduce percentages of individuals who work in the two adjacent regions, namely the Shfela and Sharon regions. Recall however that the work location can be different from the residential location only for the white-collar worker. For the blue-collar workers there is substantial increase in the percentage of individuals who chose to live and work in the Negev and the Galilee as can be seen from Panel c of Table 13b. Here we see a huge shift of workers in the blue-collar sector into the Negev and Galilee. For the Galilee there is about 8 percentage point change while the shift of workers into the Negev is smaller.

Nevertheless, most of the workers switch from residing in Tel Aviv to residing in the Sharon and in the Shfela. This is seen from Panel c of Table 14 in comparison with Panel b of that table. Interestingly there is a negative, though small effect on the Negev region. This is because the higher wages make it possible for the individuals in the white-collar sector to work in the Negev and incur the large travelling cost and live in what is considered to be more attractive areas. The overall effect on the Galilee is positive, raising the percentage of individuals residing in the region by about 10 percentage points for most of the period

In Table 15a we see the overall effect on the white-collar workers. We see that there is an increase of more than 5 percentage points in the fraction of individuals residing and working in the Negev, and an even larger increase for the individuals from the blue-collar sector as is clearly seen from Panel c of Table 15. In the Galilee there is an increase of over 7 percentage points in the number of individuals in the blue-collar sector that work and reside in the Galilee. A smaller increase of about 2% is also observed for the Negev. These increases come largely from a significant reduction in the number of workers in this sector that work and reside in the Shfela and Haifa regions, which, not surprisingly, are adjacent to the Negev and Galilee regions, respectively.

Finally, Table 16 provides the results for the conditional distribution of work locations, conditional on the region of residence. This is relevant only for the white-collar workers. We see that there is hardly any change, except for the Galilee and Haifa. There is a larger increase of about 12 percentage point in the number of workers who reside in Haifa and work in the Galilee. Moreover, the percentage of individuals who reside and work in the Galilee, rather than travel for work in Haifa is also increased by about 12 percentage points.

Overall, we see that the 25% wage subsidy does achieve the ultimate goal of shifting individuals to work more and reside in greater numbers in the two regions that were always targeted by the various governments.

7.2 Transportation Subsidy

Another goal of most governments in Israel's history was to move the heavy industry from the urban areas of Tel Aviv, Haifa, and Jerusalem into the periphery. If an individual does not go into Tel Aviv, Haifa, or Jerusalem, then the individual gets a subsidy of 50% of his transportation costs. This is quite a substantial incentive for individuals, although it does not provide enough compensation for individuals to travel across regions that are geographically far apart.

Giving transportation subsidy does very little, as expected, to employment status. Even though, in principle, it opens up more opportunities to obtain a job in one place while residing in a different place.

Interestingly, offering this generous transportation subsidy does not seem to have the affect the Israeli governments traditionally hoped for, at least not for the white-collar workers, as is clearly seen in Panel d of Table 13a. For the blue-collar workers (see Panel d of Table 13b), there is a shift in employment location from Tel Aviv and Haifa into the other regions.

In contrast to the employment location choices, there is a huge effect on the residential location as is indicated from the results reported in Panel d of Table 14. The reason for this is that the transportation subsidy was given for individuals who are commuting between all regions, not only for those who commute from Tel Aviv, Haifa, or Jerusalem to the other regions. Consequently, this policy induces significant reduction in the number of individuals residing in Tel Aviv, by over 10 percentage points, and Haifa, about 6 percentage points, but it also causes a significant reduction in the number of individuals choosing to live in the Negev region by about 4.5 percentage points. This policy also induces noticeable increases in the percentage of people residing in the Galilee by about 4 percentage points, but at the same time it also causes individuals to shift the residential location to areas that are quite populated anyway, namely the Sharon (an increase of up to 7 percentage points) and the Shfela (a huge increase of 10 percentage points and more).

Panel d of Table 15a indicates again that there is very little effect of the transportation subsidy on the combination of work-residence location of the white-collar workers. Similarly, the overall effect in this combination for the blue-collar workers is also rather negligible.

Not surprisingly, there are very small changes in all the conditional distribution of work location, conditional on the choice of residential location.

7.3 Rent Subsidy

Over the years it was always one of the most important goals of all governments in Israel to enlarge the Jewish population in the Galilee and the Negev. These two regions, and especially the Negev, were, according to policy makers "under populated". Some of the motivations for these policies are purely political, the analysis of which is beyond the scope of this paper. Here we only investigate the economic implications of these policies. One of the policies that have been considered in the past is to give new immigrants enough incentives to encourage them to locate themselves in the Galilee or the Negev.

Here we consider a policy which would give free rental to all immigrants that reside in the Negev or the Galilee. While this policy can be quite costly, versions of this policy have been considered in Israel in the past. Our goal is to assess the implied effects that stem from changing environment for the new immigrants. It turns out that among all policies that have been considered in the past, this policy has the "right" effects, in terms of the stated goals.

Panel e of Table 12 indicates (in comparison with Panel b of the table) that there is a slight shift in the employment status, from the white-collar to the blue-collar sector.

Panel e of Table 13a, for the white-collar workers, indicates a dramatic change in the choices of work location. In particular, we note a very large decrease of over 15 percentage points in the number of people working in the Shfela region. A smaller, but yet significant decrease, of 4 percentage points and more, is apparent for the Sharon region as well. In contrast, there is a large increase, ranging between 6 and 12 percentage points, in the Negev, but much smaller increase, and only in the later period, in the Galilee. Yet, this policy also induced relatively large increases, ranging between 8 and 13 percentage points, in the percentage of white-collar workers working in Haifa, and a much smaller increase in the percentage of white-collar workers working in Tel Aviv.

The picture for the blue-collar workers is almost completely reversed in terms of the regions the individuals switch to, as is transparent from Panel e of Table 13b. Note that for this sector, there is a huge increase of over 20 percentage points in the number of workers who choose to work (and live) in the Galilee, but there is almost no change in that figure in the Negev. Of course this creates an imbalance between the two sectorial groups and may introduce more inefficiencies in the system and discrepancies in the labor market. But the investigation of this issue is beyond the scope of this paper.

In terms of the place of residence we can see that this policy has mixed effects as is presented in Panel e of Table 14. This policy does contribute to a significant reduction in the percentage of immigrants living in the big cities of Tel Aviv and Haifa, ranging from 6 to 12 percentage points over the various periods. At the same time, it only contributes to an increase in the percentage of people living in the Galilee, of over 24 percentage points, but has negative effect of about 4 percentage points on those residing in the Negev. This is largely because the shift into the Galilee is done by the blue-collar workers, who account for 2/3 of the immigrant population, while the shift into the Negev is done by the white-collar workers.

The rent subsidy policy does contribute to changes in the work-residence location combinations. Panel e of Table 15a indicates that there is a significant increase in the number of individuals in the white-collar sector, who reside in the Galilee and work in either the Galilee or Haifa (two adjacent regions) but only a 1.2 percentage points increase in those who reside and work in the Negev. This is accompanied by a reduction of people who live in the central part of Israel, i.e., Tel Aviv, Sharon, and Shfela, but the effect is not very large.

The results presented in Table 15b indicate a different change for the blue-collar workers. Specifically, there is a huge reduction in the percentage of individuals who reside and live in the Shfela (almost 17 percentage point reduction) and Haifa (about 4 percentage point reduction). The increase in the fraction of blue-collar workers is almost exclusively in the Galilee, an increase of well over 20 percentage points. These changes lead to minor changes in the conditional distributions as is indicated by the results reported in Panel e of Table 16. The changes are largely in the Galilee and the Shfela region, with no major change in any other region.

7.4 Residential Location Lump-Sum Subsidy

In the past the Israeli government has tried a number of housing subsidies. For the earlier immigration waves from the USSR during the early 1970s the government simply allocated housing units according to some criteria based on family size, etc. For recent immigration waves the government simply allocated a lump-sum of money which the immigrant could use as they deemed appropriate. Both policies raised a lot of objections and certainly have not achieved the goal of relocating the new immigrants to the Negev or the Galilee. Here we consider an alternative policy. Under this policy an individual gets upon arrival in Israel a lump-sum subsidy of 90,000 NIS, provided that he chooses to reside in either of these two regions. If at some point the immigrant relocates himself to a different region of the country he has to return the money without additional interest.

This is the most direct and most effective policy aimed at increasing the fraction of individuals choosing to live in the Galilee and the Negev.

First note from Panel f of Table 12 that this policy has an effect on the employment status distribution across years. It draws individuals into the two regions in which wage offers are more likely to come than in other regions for the white-collar workers. The situation for the blue-collar workers is reversed. Hence we see a shift of the immigrants into the white-collar sector.

Panel f in Tables 13a and 13b show a dramatic effect on the work location. For the white-collar workers there are huge increases in the percentage of people working both in the Negev and the Galilee. There is an increase of 10.4-12.7 percentage points in the Galilee and a change of over 30 percentage points in most years in the Negev. For the blue-collar workers there is an even larger increase in the Negev of over 40 percentage points in most years, but a negative effect on the number of individuals working in the Galilee. The reason is that in both places the immigrants get the same subsidy, but it makes the Negev a lot more attractive relative to all other regions, including the Galilee, because of the lower housing costs.

This of course affects the residential choice, because the blue-collar workers reside in the same place they work. Consequently, there is an increase of 14-15 percentage points in the number of immigrants residing in the Galilee and about a 28 percentage point increase in the Negev (See Panel f of Table 14).

In Panel f of Table 15a we see the effect of the residence-work combination for the white collar workers. Note that this policy raised the percentage of white-collar workers who live and reside in the Negev by 35 percentage points. But there are no white-collar workers who travel from the Negev elsewhere. In the Galilee there is an increase of almost 7 percentage points in the percentage of individuals living and working in the region, but there is also additional increase of close to 9 percentage point in the percentage of people residing in the Galilee and working in Haifa.

Panel f of Table 15b show similar increases for the blue-collar workers: an increase of over 30 percentage points in the Negev, and an over 11 percentage point increase in the Galilee, in the number of immigrants residing and working and these two regions.

Finally, Panel f of Table 16, shows that the vast changes in the residential choices across regions have very little effect on the distribution of work location for workers in each of the seven regions.

8 Conclusion

In this study we empirically examine the effect of national migration policy on the regional location choices and labor market outcomes of migrant workers. We focus here on the decisions made by a group of immigrants who came to Israel from the former USSR during the period 1989 to 1995. Specifically we focus on measuring the consequences of Israeli government intervention in the housing market on the labor market outcomes of these new immigrants. These immigrants were allowed to freely choose their first locations of residence anywhere in the country. However, the government had established a number of policies in the housing market to influence these first location choices, and consequently all subsequent relocation choices.

The Israeli government altered relative housing costs and prices across all regions of the country. The government did that by altering the incentives of builders on one side and by offering differential mortgage subsidies across the different regions.

In order to examine the impact of the housing market intervention on regional location choices and labor market outcomes, we develop and estimate a dynamic discrete choice panel data model of employment and location choices, using longitudinal data on male engineer immigrants from the USSR that arrived in Israel between 1989 and 1995. The model developed addresses several features which have been shown to be crucial in a few other studies, namely the housing costs, traveling costs from the region of residence to the region of employment, and the effect of changes in the underlying economic variable on the reallocation of these new immigrants. We include a few novel features that have not been introduced before. Specifically, we include the regional housing cost function, which depends on individual and family characteristics, and occupation-specific wage functions, for two general occupation categories: white- and blue-collar occupations.

The results shed new light on several issues regarding this group of immigrants, and more generally the large immigration wave that came from the former USSR from 1989 to 1995. We find that previous experience workers had before coming to Israel has had absolutely no effect on either the probability of obtaining a job, or on the wage function in either the white-collar or blue-collar sectors. We also find significant differences in the wage offer functions for the white-collar workers across the regions. For the blue-color workers there are hardly any differences.

The results imply that there are enormous traveling costs associated with commuting from one region to another for work. This is especially true for the Negev, a region in which almost all residents also work in the region.

The model, by and large, performs very well in terms of its predictions. For virtually all key variables the models predictions are quite close to the observed data. This gives us the confidence about the usefulness of the policy simulations we conducted.

We examine a number of policies which are designed to give immigrants incentives to reside and work outside of the main urban areas, and specifically to give them incentives to move to the northern region of the Galilee and southern region of the Negev. The four simulations we conduct include: (a) wage subsidy to all workers in the Galilee and Negev of 25% of their wages; (b) transportation subsidy of 50% to all workers outside the regions of Tel Aviv, Haifa, and Jerusalem; (c) rent subsidy of 100% to all workers residing in the Galilee and the Negev; and (d) lump-sum residential subsidy of 90,000 NIS given to all individuals that move after arrival in Israel to either the Galilee or the Negev.

The usefulness of some of the policy measures are questionable, especially the transportation subsidy. However, the residential subsidy was found to be very effective, drawing the new immigrants into the Galilee and especially the Negev. The other two subsidies, i.e. rent and wage subsidies have mixed results, on one hand they increase the fraction of immigrants in the Galilee, but lowering it in the Negev. Also, the various policies give different incentives to individuals who are employed in the two different sectors. In particular, the white-collar workers are drawn more into the Negev, while the blue-collar workers are drawn into the Galilee, creating a mismatch in terms of the labor mix needed in all the regions.

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Table 1: Descriptive Statistics

Variable	Mean	St. Dev.	Obs.
General Variables:			
Employed	.87	—	655
Monthly Earnings	3,740	(1,738)	571
Monthly Housing Costs	1000	(604)	677
Months In Israel	46.68	(16.45)	697
Age	42.01	(8.65)	697
Years of Education	16.45	(1.60)	697
Previous Experience	16.11	(8.54)	697
Married	.89	—	697
Children under 21 Living at Home	1.11	(.86)	
Years of Education of Spouse	14.98	(2.07)	624
From Ukraine	.31	—	697
From Belorussia	.11	—	697
From Russia	.32	—	697
Year of Arrival			697
1989	.01	—	
1990	.40	—	
1991	.19	—	
1992	.15	—	
1993	.16	—	
1994	.09	—	
Monthly Earnings:			
Semester 1	NA	NA	—
Semester 2	2,599	579	15
Semester 5	2,909	835	33
Semester 8	3,446	1,478	34
Semester 11	4,190	2,065	121
Monthly Housing Costs:			
Semester 1	NA	NA	—
Semester 2	1,398	1,459	18
Semester 5	1,058	421	46
Semester 8	940	409	40
Semester 11	918	433	141

Note: The first four variables, the monthly housing costs and the monthly eranings are measured at the time of the survey in 1995. The remaining variables are measured at the time of arrival.

Table 2a: Residential Locations, by Period (row percentage)

Semester	Tel Aviv	Sharon	Shfela	Haifa	Galilee	Negev	Jerus.	Obs
1.	10.6	9.6	29.8	16.3	13.8	11.4	8.4	667
2.	10.9	10.0	29.6	15.3	13.8	12.5	8.1	682
3.	10.5	10.5	28.2	14.6	14.5	13.6	8.1	664
4.	10.6	10.1	28.8	14.5	14.3	13.5	8.2	635
5.	9.7	10.7	29.6	14.4	14.9	12.9	8.0	599
6.	8.8	10.1	29.6	14.4	16.0	13.5	7.6	555
7.	8.7	9.8	29.7	14.4	16.7	12.8	7.9	492
8.	8.4	8.9	30.3	14.0	17.3	14.0	7.2	429
9.	7.2	9.0	30.8	14.6	18.0	13.6	6.9	390
10.	6.7	8.9	31.4	16.5	16.5	12.4	7.6	315
11.	4.5	7.9	31.1	18.6	18.6	10.2	9.0	177

Table 2b: Distribution of Employment Status, by Period (row percentage)

Semester	Non-Empl.	White-Collar	Blue-Collar
1.	76.5	2.4	21.1
2.	27.8	12.3	59.8
3.	17.0	15.2	66.8
4.	16.3	18.5	65.2
5.	13.4	21.5	65.2
6.	12.2	24.2	63.7
7.	9.9	28.1	62.0
8.	11.1	30.2	58.7
9.	10.5	31.5	58.1
10.	10.5	33.3	56.2
11.	9.0	36.7	54.2

Table 2c: Employment Status by Region of Residence (column percentage)

	Tel Aviv	Sharon	Shfela	Haifa	Galilee	Negev	Jerus.
Whole Sample:							
Nonemployment	20.7	19.2	18.0	31.2	23.6	24.1	22.0
Blue Collar	66.3	61.8	57.4	50.8	56.8	50.6	62.9
White Collar	12.9	19.0	24.6	18.0	19.7	25.3	15.1
Obs. (total $= 5,640$)	526	552	1679	850	865	723	445
Semester 1:							
Nonemployment	70.4	82.8	65.8	88.1	82.6	75.0	82.1
Blue Collar	28.2	15.6	31.7	11.0	16.3	17.1	14.3
White Collar	1.4	1.6	2.5	0.9	1.1	7.9	3.6
Obs. (total $= 667$)	71	64	199	109	92	76	56
Semester 2:							
Nonemployment	29.7	25.0	23.3	35.6	26.6	29.4	30.9
Blue Collar	64.9	61.8	64.3	51.9	62.8	52.9	54.5
White Collar	5.4	13.2	12.4	12.5	10.6	17.7	14.6
Obs. (total $= 682$)	74	68	202	104	94	85	55
Semester 5:							
Nonemployment	13.8	9.4	8.5	24.4	15.7	15.6	8.3
Blue Collar	74.1	70.3	66.1	57.0	67.4	53.2	72.9
White Collar	12.1	20.3	25.4	18.6	16.9	31.2	18.8
Obs. (total $= 599$)	58	64	177	86	89	77	48
Semester 8:							
Nonemployment	2.8	10.5	8.5	16.6	10.8	16.7	9.7
Blue Collar	75.0	63.2	53.8	56.7	59.5	48.3	77.4
White Collar	22.2	26.3	37.7	26.7	29.7	35.0	12.9
Obs. (total $= 429$)	36	38	130	60	74	60	31
Semester 11:							
Nonemployment	25.0	7.2	5.4	9.1	6.1	16.7	12.5
Blue Collar	50.0	71.4	47.3	57.6	51.5	50.0	68.7
White Collar	25.0	21.4	47.3	33.3	42.4	33.3	18.8
Obs. (total $= 177$)	8	14	55	33	33	18	16

Table 3: Residential and Work Locations for White Collar Workers

Residential Location	Employment Location							
	Tel Aviv	Sharon	Shfela	Haifa	Galilee	Negev	Jerus.	Obs
Tel Aviv	61.1	4.2	34.7	—	—	—	—	95
Sharon	41.5	29.3	18.7	10.6	—	—	—	123
Shfela	30.2	4.9	55.7	3.4	2.7	.4	2.7	474
Haifa	3.0	0.6	—	86.7	9.6	—	—	166
Galilee	—	1.7	3.4	30.3	64.6	—	—	178
Negev	1.5	—	7.4	—	—	91.1	—	203
Jerusalem	—	—	—	—	—	—	100.0	83

Table 4: OLS Log Monthly Housing Costs Regressions

Variable	(1)	(2)	(3)
Married	.157	.537	.465
	(.086)	(.234)	(.221)
One Child	.166	.119	.110
	(.059)	(.058)	(.055)
Two Children	.208	.132	.142
	(.063)	(.068)	(.064)
More than 2 Kids	.056	-.045	-.059
	(.166)	(.173)	(.160)
Renting	.365	.374	.233
	(.053)	(.066)	(.066)
Education	—	.013	.010
		(.015)	(.014)
Previous Exp.	—	.021	.016
		(.014)	(.012)
Previous Exp. Sq.	—	-.0005	-.0004
		(.0003)	(.0003)
Age >= 40	—	-.141	-.139
		(.075)	(.071)
Northern Tel Aviv	—	—	-.026
			(.079)
Southern Tel Aviv	—	—	-.062
			(.059)
Haifa	—	—	-.304
			(.071)
Galilee	—	—	-.532
			(.085)
Negev	—	—	-.661
			(.108)
Jerusalem	—	—	-.048
			(.099)
Other Regressors	No	Yes	Yes
RMSE	.5924	.5887	.5406
R Sq.	.0873	.1221	.2667
N	677	674	674

Note: Other regressors include dummies for length of time in the country (six month periods), dummies for republic of origin (Ukraine, Belarus, Russia) and years of education of the spouse. Approximately one-third of the individuals in the sample are renting. Robust standard errors are in parentheses. Each column in the table represents a different regression with the same dependent variable, but different explanatory variables.

Table 5: OLS Employment and Log Monthly Earnings Regressions

	Employment			Log Monthly Earnings		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Education	.0049	.0062	.0060	-.0130	-.0131	-.0133
	(.0091)	(.0092)	(.0090)	(.0097)	(.0096)	(.0097)
Previous Exp.	.0235	.0232	.0234	.0044	-.0022	-.0031
	(.0079)	(.0080)	(.0078)	(.0083)	(.0080)	(.0080)
Previous Exp. Sq.	-.0006	-.0006	-.0006	-0.0003	-0.0002	-0.0001
	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)
Age $\geq$ 40	-.0752	-.0852	-.0925	-.1130	-.0875	-.0835
	(.0422)	(.0435)	(.0426)	(.0581)	(.0545)	(.0552)
Northern Tel Aviv	—	—	.0127	—	—	.0297
			(.0476)			(.0700)
Southern Tel Aviv	—	—	-.0401	—	—	.1030
			(.0403)			(.0558)
Haifa	—	—	-.1756	—	—	.0762
			(.0583)			(.0737)
Galilee	—	—	-.0723	—	—	-.0709
			(.0474)			(.0635)
Negev	—	—	-.1585	—	—	.0406
			(.0527)			(.0644)
Jerusalem	—	—	-.0920	—	—	-.0278
			(.0619)			(.0742)
Other Regressors	No	Yes	Yes	No	Yes	Yes
RMSE	.3346	.3333	.3290	.3867	.3587	.3583
R^2	.0353	.0690	.1013	.1198	.2411	.2510
Observations	655	652	652	568	565	565

Note: Other regressors include married and family size dummies, dummies for length of time in the country (six month periods), dummies for republic of origin (Ukraine, Belarus, Russia) and years of education of the spouse. Robust standard errors are in parentheses. Each column in the table represents a different regression with the same dependent variable, but different explanatory variables.

Table 6: Utility of Non-Employment

No.	Variable	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.
Value of Non-Employment, $b_{1rt}\left(\varepsilon_{i1rt}\right)$:									
		α							
1.	Tel Aviv	15,499	70.7						
2.	Sharon	12,947	53.1						
3.	Shfela	15,468	18.1						
4.	Haifa	16,007	33.8						
5.	Galilee	15,766	44.3						
6.	Negev	15,367	33.4						
7.	Jerusalem	11,691	45.1						
Taste for Residential Location, $\tau_r\left(x_{it}, \mu_{ir}\right)$:									
		τ_0		τ_1		τ_2		τ_3	
8.	Tel Aviv	0	—	0	—	0	—	0	—
9.	Sharon	0	—	0	—	2467.2	515.0	7,078.5	107.1
10.	Shfela	4698.9	12.5	11,049.0	147.4	4,746.2	62.5	9,068.7	768.2
11.	Haifa	2313.3	4.0	10,413.4	55.3	-47.9	12.0	0	—
12.	Galilee	0	—	8,311.7	292.1	0	—	0	—
13.	Negev	-1137.3	11.4	0	—	0	—	0	—
14.	Jerusalem	0	—	0	—	0	—	0	—
Housing Cost, $hc_{rj}\left(x_{it}\right)$:									
		γ_0							
15.	Tel Aviv	7.53	0.043						
16.	Sharon	6.91	0.054						
17.	Shfela	7.12	0.017						
18.	Haifa	7.07	0.034						
19.	Galilee	6.72	0.026						
20.	Negev	6.19	0.026						
21.	Jerusalem	7.03	0.268						
		γ_1		γ_2		γ_3		γ_4	
22.	All regions	0.022	0.001	0	—	0	—	-0.394	0.156

$$u_{i1rt} = b_{1rt}(\varepsilon_{i1rt}) + \tau_r(x_{it}, \mu_{ir}) - hc_{rj}(x_{it}) - \gamma_j I\left(r_t \neq r_{t-1}\right),$$
$$b_{1rt}\left(\varepsilon_{i1rt}\right) = \alpha_r I\left(t = 1\right) + \exp\left(\varepsilon_{i1rt}\right),$$
$$\tau_r\left(x_{it}, \mu_{ir}\right) = \tau_r(x_i, \mu_{ri}) = \tau_{0r} + \tau_{1r}R_{1i} + \tau_{2r}R_{2i} + \tau_{3r}R_{3i} + \exp\left(\mu_{ir}\right),$$
$$hc_{rj}\left(x_{it}\right) = 6 * \exp\left\{\gamma_{0r} + \gamma_1 M_{it} + \gamma_2 NK_{it} + \gamma_3 TP_{1i} + \gamma_4 TP_{2i}\right\}$$

Table 7: Utility from Employment in White-Color Occupation

No.	Variable	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.
$\ln w_{jkrit}(x_i, x_t)$:									
		β_{1r0}							
1.	Tel Aviv	8.844	0.009						
2.	Sharon	8.225	0.024						
3.	Shfela	8.594	0.014						
4.	Haifa	8.700	0.011						
5.	Galilee	8.742	0.013						
6.	Negev	8.674	0.123						
7.	Jerusalem	8.393	0.053						
8.	All regions	β_{11}		β_{12}		β_{13}		β_{14}	
		-0.0346	0 .0006	-0.0055	0.0006	0	—	0.0531	0.0017
9.	All regions	β_{15}		β_{16}		β_{17}		β_{18}	
		0	—	0.1196	0.0023	0.1442	0.0011	0	—
$tc(r, r')$:									
10.	All regions	tc_1		tc_2		tc_3			
		8,471	25.2	183,671	2,581.4	18,753	51.9		
11.	All regions	ρ_1		$\sigma^2_{w_1}$					
		0.5000	0.0357	0.1432	0.0043				
$\tau_r(x_{it}, \mu_{ir})$: As in Table 4									
$hc_{rj}(x_{it})$: As in Table 4									

$$u_{ikrt} = 6 \cdot w_{krt}(x_i, x_{kt}) e^{\varepsilon_{krt}} + \tau_r(x_i, \mu_{ir}) - hc_r(x_i) - \gamma_j I(r_t \neq r_{t-1}) - tc(r, r'), \quad k = 2 \quad (1)$$

$$\begin{aligned} \ln w_{jkrit}(x_i, x_t) &= \beta_{0k} + \beta_{1k} S_i + \beta_{2k} x_{0i} + \beta_{3k} x_{0i}^2 + \beta_{4k} x_{kt} + \beta_{5k} x_{kt}^2 \\ &\quad + \beta_{6k} I(\text{age}_i >= 40) + \beta_{7k} TP_{1i} + \beta_{8k} TP_{2i} + v_{jkrit}, \\ v_{jkrit} &= \rho_1 v_{jkri,t-1} + \omega_{jrti} \end{aligned}$$

$$\begin{aligned} tc_1 &= tc_{1,2}, tc_{1,3}, tc_{4,5} \\ tc_2 &= tc_{1,4}, tc_{1,5}, tc_{1,6}, tc_{1,7}, tc_{2,5}, tc_{2,6}, tc_{2,7}, tc_{3,5} tc_{3,6} tc_{3,7}, tc_{4,6} tc_{4,7}, tc_{5,6}, tc_{5,7}, tc_{6,7} \\ tc_3 &= tc_{2,3}, tc_{2,4}, tc_{3,4} \end{aligned}$$

Table 8: Utility from Employment in Blue-Color Occupation

No.	Variable	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.
	$\ln w_{jkrit}(x_i, x_t)$:								
		β_{2r0}							
1.	Tel Aviv	8.351	0.0035						
2.	Sharon	8.339	0.0218						
3.	Shfela	8.401	0.0117						
4.	Haifa	8.427	0.0175						
5.	Galilee	8.376	0.0177						
6.	Negev	8.197	0.0374						
7.	Jerusalem	8.157	0.0372						
8.	All regions	β_{21}		β_{22}		β_{23}		β_{24}	
		-0.0345	0.00044	-0.0055	0.0001	0	—	0.0547	0.0031
9.	All regions	β_{25}		β_{26}		β_{27}		β_{28}	
		0	—	0.1196	0.00228	-0.3763	0.0071	0	—
10.	All regions	ρ_2		$\sigma^2_{w_2}$					
		0	—	0.9586	0.0030				

$\tau_r(x_{it}, \mu_{ir})$: As in Table 4
$hc_{rj}(x_{it})$: As in Table 4

Table 9: Probability of Losing Job, by Type, Λ_{kj}

No.	Occupation	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.
		η of Type 0		η of Type 1		η of Type 2	
1.	White color	-7.5816	0.1516	-7.8901	5.5708	-0.9635	0.0898
	Implied prob.	0.0005		0.0004		0.2762	
2.	Blue color	-6.1755	0.1895	Same as above		Same as above	
	Implied prob.	0.0021		0.0004		0.2762	

$$\Lambda_{kj} = \exp\left(\eta_{kj}\right) / \left(1 + \exp\left(\eta_{kj}\right)\right) \text{ for } k = 1, 2;\ j = 0, 1, 2.$$

Table 10: Probability of Job Arrival, by Type

No.	Variable	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.	Coeff. Est.	St. Err.
		White-Color, $\lambda_{10}(r)$		Blue-Color, $\lambda_{20}(r)$			
1.	Tel Aviv	-1.9263	0.0083	2.3694	0.0478		
2.	Sharon	-0.8950	0.0058	1.2532	0.2345		
3.	Shfela	-1.2811	0.0116	2.1082	0.1651		
4.	Haifa	-0.8950	0.0123	1.8757	0.0075		
5.	Galilee	-2.2911	0.0994	2.2637	0.0368		
6.	Negev	-0.4779	0.0082	1.1701	0.0056		
7.	Jerusalem	-0.7639	0.1137	1.7216	0.0064		
		$\lambda_1 \cdot I\left(UE_{t-1}\right)$		$\lambda_2 \cdot age$		$\lambda_3 \cdot age^2$	
8.	White color	-0.1504	0.0045	-0.2205	0.0091	-0.0224	0.0003
9.	Blue color	Same as above		Same as above		Same as above	
		$\lambda_4 \cdot TP_1$		$\lambda_5 \cdot TP_2$			
10.	White color	3.2935	0.0107	-9.6020	2.7405		
11.	Blue color	-0.2003	0.0152	-2.3539	0.0269		
		ψ					
10.	P_{krit} for $t = 0$	0.9145	0.0210				

$$\begin{aligned} P_{krit} &= \exp\left(A_{krit}\right) / \left(1 + \exp\left(A_{krit}\right)\right), && \text{if } t = 0 \\ &= \psi \exp\left(A_{krit}\right) / \left(1 + \exp\left(A_{krit}\right)\right), && \text{otherwise,} \end{aligned}$$

$$A_{k'rit} = \lambda_{0r} + \lambda_{1r} I\left(\text{Occ. 0 at } t-1\right) + \lambda_{2r}\text{age}_i + \lambda_{3r}\text{age}_i^2 + \lambda_4 TP_{1i} + \lambda_5 TP_{2i},$$

Table 11: Other Parameters

	Coeff. Estimate	Standard Error	Coeff. Estimate	Standard Error	Coeff. Estimate	Standard Error
Type-specific parameter:						
	Type 0		Type1		Type 2	
1. Prob. param, φ	—	—	-0.9687	0.0019	-1.8757	0.0027
Implied probabilities	0.680		0.257		0.063	
2. Moving costs	272,447.2	3,106.0	172,698.1	2,198.6	40,098.7	3,069.9
Standard deviation of measurement errors						
3. Wages	0.3694	0.0268				
4. Cost of housing	0.5580	0.0441				
Base classification error rate:						
5. Parameter, ϑ	1.6217	0.0509				
Implied probability	0.835					

$\pi_j = \Pr(\text{Type j}) = \exp(\varphi_j) / (1 + \exp(\varphi_1) + \exp(\varphi_2)), \ j = 1, 2.$

$\Pr(\text{Type j}) = 1 - \pi_1 - \pi_2.$

$c = \exp(\vartheta) / (1 + \exp(\vartheta)) = 0.835 = 1 - \text{Classification error.}$

Table 12: Employment Status, by Semester

a. Actual Data

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.765	.278	.180	.163	.134	.122	.099	.111	.105	.105	.090
White-collar	.024	.123	.152	.185	.215	.242	.281	.302	.315	.333	.367
Blue-collar	.211	.598	.668	.652	.652	.637	.620	.587	.581	.562	.542

b. Basic Model

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.825	.311	.146	.098	.082	.076	.072	.071	.070	.070	.069
White-collar	.032	.106	.156	.191	.218	.238	.254	.266	.276	.284	.291
Blue-collar	.143	.583	.698	.711	.700	.686	.674	.663	.654	.646	.640

c. Wage Subsidy Simulation

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.671	.270	.141	.102	.089	.083	.080	.078	.077	.076	.075
White-collar	.045	.113	.158	.190	.215	.233	.248	.259	.268	.276	.284
Blue-collar	.285	.617	.701	.708	.697	.684	.673	.663	.655	.647	.641

d. Transportation Subsidy Simulation

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.824	.305	.144	.097	.082	.076	.072	.071	.070	.070	.069
White-collar	.033	.117	.168	.202	.227	.247	.261	.272	.281	.289	.296
Blue-collar	.143	.578	.689	.701	.691	.678	.667	.657	.649	.641	.635

Table 12: (Continued)

e. Rent Subsidy Simulation

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.847	.312	.145	.097	.081	.075	.072	.070	.070	.070	.069
White-collar	.029	.102	.153	.189	.215	.235	.251	.262	.272	.280	.288
Blue-collar	.124	.586	.702	.715	.705	.690	.678	.667	.658	.650	.643

f. Living Location Subsidy Simulation

Employment Status	Semester										
	1	2	3	4	5	6	7	8	9	10	11
Non-Employed	.890	.385	.189	.121	.094	.083	.078	.075	.073	.073	.072
White-collar	.025	.102	.160	.200	.229	.252	.270	.284	.296	.306	.317
Blue-collar	.086	.514	.651	.680	.677	.665	.653	.641	.631	.621	.611

Table 13a: Actual and Predicted Work Location, by Semester for White-Collar Workers

a. Actual Data

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.214	.224	.208	.209	.192	.189	.168	.170	.171	.144	.070
Sharon	.000	.066	.073	.046	.050	.047	.031	.051	.054	.056	.053
Shfela	.143	.158	.208	.255	.267	.268	.298	.280	.279	.322	.351
Haifa	.071	.211	.188	.164	.167	.173	.191	.195	.189	.189	.246
Galilee	.071	.105	.094	.109	.108	.118	.107	.119	.126	.144	.175
Negev	.357	.145	.135	.136	.142	.142	.145	.144	.135	.111	.070
Jerusalem	.143	.092	.094	.082	.075	.063	.061	.042	.045	.033	.035

b. Basic Model

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.078	.123	.125	.128	.132	.135	.138	.142	.145	.148	.151
Sharon	.191	.101	.098	.098	.098	.096	.094	.093	.091	.089	.088
Shfela	.257	.327	.320	.314	.308	.303	.298	.297	.294	.289	.287
Haifa	.208	.156	.150	.148	.148	.149	.150	.150	.151	.152	.152
Galilee	.125	.120	.115	.112	.110	.110	.111	.110	.111	.111	.110
Negev	.066	.096	.112	.120	.124	.126	.128	.128	.128	.130	.130
Jerusalem	.075	.077	.080	.081	.081	.081	.081	.081	.081	.081	.081

c. Wage Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.137	.138	.155	.166	.176	.182	.188	.196	.202	.207	.214
Sharon	.053	.074	.066	.061	.056	.051	.046	.041	.037	.033	.028
Shfela	.166	.196	.205	.208	.207	.205	.201	.199	.195	.187	.186
Haifa	.173	.204	.185	.173	.168	.165	.163	.162	.160	.160	.157
Galilee	.085	.067	.071	.075	.079	.083	.089	.093	.098	.104	.106
Negev	.324	.256	.247	.242	.237	.234	.233	.230	.228	.229	.228
Jerusalem	.063	.066	.072	.075	.077	.079	.080	.080	.081	.080	.081

Table 13a: (Continued)

d. Transportation Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.115	.131	.154	.168	.179	.187	.194	.202	.209	.215	.222
Sharon	.056	.129	.089	.070	.060	.051	.043	.037	.032	.028	.023
Shfela	.194	.240	.262	.266	.263	.259	.254	.250	.244	.235	.233
Haifa	.199	.208	.193	.187	.183	.184	.185	.185	.186	.188	.186
Galilee	.077	.053	.057	.060	.063	.065	.069	.071	.073	.075	.076
Negev	.297	.179	.176	.177	.176	.176	.177	.177	.178	.180	.179
Jerusalem	.063	.060	.068	.073	.076	.077	.079	.079	.080	.079	.080

e. Rent Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.109	.114	.129	.139	.148	.155	.160	.168	.174	.178	.183
Sharon	.049	.075	.065	.060	.054	.049	.044	.039	.035	.030	.026
Shfela	.150	.158	.155	.153	.151	.148	.142	.140	.137	.129	.128
Haifa	.183	.285	.278	.268	.259	.254	.249	.244	.239	.240	.238
Galilee	.093	.089	.101	.110	.119	.126	.136	.141	.146	.154	.155
Negev	.360	.215	.203	.198	.195	.193	.192	.191	.192	.192	.192
Jerusalem	.056	.063	.070	.073	.076	.076	.077	.077	.078	.077	.078

f. Living Location Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.058	.063	.070	.076	.081	.086	.090	.094	.098	.101	.103
Sharon	.029	.050	.042	.038	.034	.031	.028	.025	.022	.019	.016
Shfela	.037	.070	.067	.066	.063	.061	.059	.057	.056	.054	.053
Haifa	.141	.175	.164	.156	.150	.148	.145	.143	.140	.139	.136
Galilee	.128	.072	.071	.074	.078	.083	.089	.092	.096	.100	.098
Negev	.563	.526	.538	.540	.541	.539	.536	.536	.535	.534	.542
Jerusalem	.043	.046	.048	.051	.052	.052	.053	.053	.053	.053	.053

Table 13b: Predicted Work Location, by Semester for Blue-Collar Workers

b. Basic Model

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.062	.122	.118	.116	.115	.115	.114	.114	.113	.114	.114
Sharon	.202	.099	.099	.102	.105	.106	.107	.108	.109	.109	.111
Shfela	.399	.366	.355	.349	.346	.343	.340	.341	.341	.338	.341
Haifa	.132	.132	.132	.132	.132	.133	.136	.136	.137	.138	.136
Galilee	.081	.114	.111	.109	.109	.109	.110	.110	.110	.112	.110
Negev	.026	.091	.107	.114	.117	.118	.117	.116	.114	.113	.112
Jerusalem	.098	.077	.078	.078	.077	.077	.077	.077	.076	.077	.076

c. Wage Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.052	.113	.115	.114	.113	.113	.112	.112	.112	.112	.112
Sharon	.109	.092	.096	.099	.102	.103	.104	.105	.106	.106	.108
Shfela	.193	.283	.287	.285	.283	.280	.275	.277	.278	.272	.274
Haifa	.068	.112	.117	.117	.117	.117	.118	.117	.118	.118	.116
Galilee	.349	.205	.187	.184	.184	.187	.191	.192	.192	.198	.197
Negev	.174	.124	.124	.126	.126	.126	.124	.122	.120	.119	.119
Jerusalem	.056	.071	.075	.076	.076	.076	.075	.076	.075	.076	.075

d. Transportation Subsidy Simulation

	Semester										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.062	.118	.114	.111	.110	.110	.110	.110	.110	.111	.111
Sharon	.202	.098	.098	.101	.104	.106	.107	.108	.109	.109	.111
Shfela	.399	.369	.359	.353	.350	.346	.343	.343	.343	.340	.343
Haifa	.132	.131	.130	.130	.130	.131	.134	.134	.135	.137	.135
Galilee	.081	.115	.113	.111	.110	.110	.111	.111	.111	.113	.111
Negev	.026	.092	.108	.116	.119	.119	.119	.117	.115	.114	.113
Jerusalem	.098	.077	.079	.079	.078	.078	.077	.077	.077	.077	.077

Table 13b: (Continued)

e. Rent Subsidy Simulation

Region	Semester 1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.069	.116	.113	.111	.110	.109	.109	.108	.108	.108	.108
Sharon	.207	.090	.091	.094	.096	.097	.098	.099	.100	.100	.102
Shfela	.234	.189	.183	.181	.180	.177	.173	.176	.177	.169	.171
Haifa	.100	.098	.099	.099	.098	.098	.098	.098	.097	.097	.097
Galilee	.251	.340	.331	.325	.323	.324	.330	.328	.328	.337	.334
Negev	.032	.093	.110	.117	.120	.121	.120	.118	.117	.115	.115
Jerusalem	.108	.073	.074	.074	.074	.073	.073	.073	.073	.073	.073

f. Living Location Subsidy Simulation

Region	Semester 1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.071	.096	.088	.084	.083	.082	.082	.082	.082	.082	.083
Sharon	.185	.067	.064	.065	.066	.067	.068	.068	.069	.070	.072
Shfela	.120	.083	.076	.073	.072	.071	.071	.071	.072	.072	.073
Haifa	.090	.071	.067	.065	.065	.064	.064	.064	.064	.064	.064
Galilee	.302	.242	.223	.215	.213	.216	.223	.226	.230	.237	.233
Negev	.115	.380	.423	.440	.446	.444	.437	.432	.426	.418	.419
Jerusalem	.116	.062	.059	.058	.057	.057	.057	.057	.057	.057	.057

Table 14: Actual and Predicted Place of Residence, by Semester

a. Actual Data

Region	Year										
	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.214	.224	.208	.209	.192	.189	.168	.169	.171	.144	.070
Sharon	.000	.066	.073	.045	.050	.047	.031	.051	.054	.056	.053
Shfela	.143	.158	.208	.255	.267	.268	.298	.280	.279	.322	.351
Haifa	.071	.211	.188	.164	.167	.173	.191	.195	.189	.189	.246
Galilee	.071	.105	.094	.109	.108	.118	.107	.119	.126	.144	.175
Negev	.357	.145	.135	.136	.142	.142	.145	.144	.135	.111	.070
Jerusalem	.143	.092	.094	.082	.075	.063	.061	.042	.045	.033	.035

b. Basic Model

Region	Year										
	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.119	.145	.166	.179	.189	.196	.203	.210	.217	.224	.232
Sharon	.057	.080	.069	.063	.057	.051	.046	.041	.037	.032	.027
Shfela	.171	.221	.232	.235	.235	.233	.229	.225	.220	.212	.210
Haifa	.206	.238	.215	.204	.199	.199	.200	.200	.201	.203	.201
Galilee	.073	.054	.055	.055	.057	.058	.061	.062	.063	.066	.066
Negev	.308	.197	.189	.186	.184	.182	.181	.181	.181	.183	.182
Jerusalem	.065	.067	.073	.077	.079	.080	.081	.081	.081	.080	.082

c. Wage Subsidy Simulation

Region	Year										
	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.107	.108	.108	.107	.108	.107	.107	.107	.107	.108	.108
Sharon	.104	.104	.104	.104	.104	.104	.104	.104	.104	.103	.103
Shfela	.279	.278	.277	.277	.277	.274	.270	.271	.271	.266	.268
Haifa	.124	.124	.124	.124	.124	.125	.128	.128	.129	.130	.129
Galilee	.154	.154	.155	.155	.155	.156	.159	.159	.159	.162	.161
Negev	.155	.155	.155	.156	.155	.155	.155	.153	.153	.153	.153
Jerusalem	.077	.077	.077	.077	.077	.078	.078	.078	.078	.078	.078

Table 14: (Continued)

d. Transportation Subsidy Simulation

	Year										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.108	.108	.108	.108	.108	.108	.108	.108	.108	.109	.109
Sharon	.106	.107	.107	.107	.107	.107	.106	.106	.106	.105	.106
Shfela	.333	.333	.332	.331	.330	.328	.325	.325	.324	.321	.324
Haifa	.134	.134	.135	.135	.136	.138	.141	.142	.143	.145	.143
Galilee	.102	.102	.102	.102	.103	.103	.104	.104	.104	.105	.104
Negev	.138	.138	.138	.138	.138	.138	.138	.137	.136	.136	.136
Jerusalem	.078	.078	.078	.078	.078	.078	.079	.079	.079	.079	.079

e. Rent Subsidy Simulation

	Year										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.104	.104	.104	.104	.104	.104	.104	.104	.104	.104	.104
Sharon	.099	.099	.099	.099	.099	.099	.099	.099	.099	.098	.098
Shfela	.176	.176	.176	.177	.177	.176	.171	.174	.175	.167	.169
Haifa	.103	.103	.103	.103	.103	.103	.103	.104	.104	.104	.105
Galilee	.300	.300	.300	.299	.298	.300	.305	.303	.302	.310	.307
Negev	.143	.143	.143	.144	.143	.143	.143	.142	.141	.141	.142
Jerusalem	.075	.075	.075	.075	.075	.075	.075	.075	.075	.075	.076

f. Living Location Subsidy Simulation

	Year										
Region	1	2	3	4	5	6	7	8	9	10	11
Tel Aviv	.075	.076	.076	.076	.076	.076	.076	.076	.076	.076	.077
Sharon	.065	.066	.066	.066	.066	.067	.067	.067	.067	.067	.067
Shfela	.067	.067	.067	.067	.067	.067	.067	.068	.068	.068	.068
Haifa	.062	.064	.064	.064	.064	.064	.064	.064	.064	.065	.065
Galilee	.196	.194	.195	.196	.197	.200	.206	.209	.211	.216	.211
Negev	.480	.477	.476	.475	.474	.470	.463	.461	.457	.452	.457
Jerusalem	.055	.056	.056	.056	.056	.056	.056	.056	.056	.056	.057